

Technical Memorandum Work Plan Addendum

To: Will Ernst, The Boeing Company

Copies: Melissa Blankenship, USEPA Region 10 – RCRA
Dave Bartus, USEPA Region 10 – TSCA

From: Lynn Grochala, Floyd|Snider

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Project No: BP2-BOE16, Task 6

Re: Additional Characterization for OA-11 Interim Measure—Addendum Revision

Additional characterization data were collected between June 13 and June 15, 2016 within Other Area 11 (OA-11) at The Boeing Company's (Boeing's) Plant 2 facility in accordance with the June 10, 2016, *Technical Memorandum Work Plan for Additional Characterization for OA-11 Interim Measure* (Work Plan). Soil samples were collected in accordance with the Work Plan to facilitate segregation of materials that contain elevated polychlorinated biphenyls (PCBs) for disposal (Subtitle C versus Subtitle D), to further refine the excavation limits, and to serve as confirmation samples in areas where shoring will be utilized during excavation. Based on a review of preliminary PCB data and a meeting with U.S. Environmental Protection Agency (USEPA) on June 29, 2016, it was determined that additional data collection is warranted prior to construction to fully meet the objectives of the Work Plan. This additional data collection will facilitate completion of the interim measure excavation by late summer 2016.

In order to support the anticipated late summer 2016 construction schedule, this additional data collection has been scheduled for July 8, 2016, as these data are needed as soon as possible to complete the draft Interim Measure Work Plan (IMWP). These additional data collection and quality assurance and quality control procedures will be conducted in accordance with the prescribed sampling methods and procedures presented in the Work Plan.

A general overview of PCB data distribution in OA-11 is presented on Figure 1. A generalized summary of the PCB data collected in June 2016 is presented in Table 1, which depicts results by soil boring location and by sample depth in color-coded concentration ranges. Each color represents a different status with respect to regulatory and disposal requirements. The June 2016 final laboratory reports have not yet been issued; therefore, Figures 1 and 2 and Table 1 are presented as draft. However, the data are sufficient to make necessary decisions regarding additional characterization needs. Final validated data will be provided in the draft IMWP, which will be submitted later in July 2016.

Nine additional soil boring locations and one contingency soil boring location are proposed, as shown on Figure 2. Table 2 presents the proposed sample collection scheme, including sample depth intervals and associated analysis per boring. The following text summarizes associated rationale for additional data collection at each of the proposed soil boring locations:

- **OA11-DP20, -DP21, -DP23, and -DP24:** These locations will be sampled to better delineate PCB concentrations greater than 50 parts per million (ppm) recently detected in soil borings OA11-DP01 and OA11-DP02 in the area immediately adjacent to and north of SDMH 36-83. These additional data will be used to delineate the horizontal and vertical limits for soil segregation (for Subtitle C) during excavation. Proposed soil boring OA-11-DP20 will be used to delineate to the north, OA11-DP21 and -DP23 will be used to delineate to the west, and existing boring OA11-DP14 and proposed boring OA11-DP24 will be used to delineate to the east. Borings OA11-DP15 and -DP16 provide adequate bounding to the south.
- **OA11-DP19, -DP21, -DP22, -DP25, -DP26, and -DP27:** These locations will be sampled to provide sidewall and bottom confirmation sample data at the new proposed limits of excavation in both the 14-foot and 12-foot excavation areas where shoring will likely be used during excavation.
- **Contingency Soil Boring OA11-DP28:** If time allows, a tenth soil boring will be advanced west of OA11-DP01 to assist with PCB delineation west of -DP01 and northwest of SDMH 36-83. Soil samples from this boring, if collected, will be archived, and samples will be analyzed if results from OA11-DP21 are greater than 10 ppm.

This work has been scheduled for July 8, 2016, and will be completed in 1 day. Therefore, it is critical that Boeing receives USEPA concurrence and approval to move forward with this proposed additional characterization no later than July 7, 2016. We appreciate USEPA's commitment to meeting this expedited data collection schedule to ensure completion of the interim measure excavation during late summer 2016. This correspondence provides the necessary work notification of upcoming field work.

ATTACHMENTS

Table 1	Total PCB Soil Sampling Summary
Table 2	Proposed Soil Sampling Scheme
Figure 1	Total PCB Distribution in OA-11 Soil
Figure 2	Total PCBs in Soil and Proposed Soil Boring Locations in 12- and 14-Foot Excavation Areas

Tables

Table 1
Total PCB Soil Sample Summary^{1, 2, 3,}

Soil Boring		OA11-DP01	OA11-DP02	OA11-DP03	OA11-DP04	OA11-DP05	OA11-DP06	OA11-DP07	OA11-DP08	OA11-DP09	OA11-DP10	OA11-DP11	OA11-DP12	OA11-DP13	OA11-DP14	OA11-DP15	OA11-DP16	OA11-DP17	OA11-DP18
Sample Interval (feet bgs)	0-1																		
	1-2																		
	2-3																		
	3-4																		
	4-5																		
	5-6																		
	6-7																		
	7-8																		
	8-9																		
	9-10																		
	10-11																		
	11-12																		
	12-13																		
	13-14																		
	14-15																		

Notes:
1 PCB analysis was for Aroclors (summed as total) by USEPA Method 8082, consistent with the draft *Corrective Measures Study for Plant 2* .
2 PCB samples are presented in the sample intervals where they were collected (i.e., 8 to 10 feet bgs).

Abbreviations:
bgs Below ground surface
PCB Polychlorinated biphenyl

Total PCB Concentration in soil in milligrams per killogram (mg/kg)

Detected concentration > 50 mg/kg (TSCA threshold for Subtitle C Disposal)

Detected concentration between 10 mg/kg (proposed FMCL) and 50 mg/kg (TSCA threshold)

Detected concentration between 1 mg/kg and 10 mg/kg

Detected concentration less than 1 mg/kg

Archive

Archive sample analyses is not required to meet objectives.

Note: Red shading also includes PCBs detected at concentrations greater than 40 mg/kg to be conservative.

Table 2
Proposed Soil Sampling Scheme^{1, 2, 3}

Proposed Soil Boring		OA11-DP19	OA11-DP20	OA11-DP21	OA11-DP22	OA11-DP23	OA11-DP24	OA11-DP25	OA11-DP26	OA11-DP27	OA11-DP28 ⁴
Sample Interval (feet bgs)	0-1										
	1-2										
	2-3										
	3-4										
	4-5					Archive	Archive				
	5-6										
	6-7	PCBs and TPH		PCBs and TPH	PCBs and TPH	PCBs	PCBs	PCBs and TPH	PCBs and TPH		Archive
	7-8										
	8-9	PCBs	Archive	PCBs	PCBs	PCBs	PCBs	Archive	Archive	PCBs	Archive
	9-10										
	10-11		PCBs	Archive	Archive	PCBs	PCBs	PCBs	Archive	PCBs and TPH	Archive
	11-12										
	12-13		PCBs	Archive	Archive	PCBs	PCBs			Archive	Archive
	13-14										
	14-15	PCBs and TPH	Archive	PCBs and TPH	PCBs and TPH	PCBs	PCBs	PCBs and TPH	PCBs and TPH		Archive
	15-16					Archive	Archive		Archive		
	16-17					Archive	Archive		Archive		
	17-18										

Notes:

1 Analysis:

TPH analysis will be by the NWTPH-Dx method, quantified for diesel, heavy-oil, and mineral spirit/Stoddard solvent ranges.

PCB analysis will be for Aroclors (summed as total) by USEPA Method 8082, consistent with the draft *Corrective Measures Study for Plant 2*.

2 PCB and TPH samples are presented in the sample intervals where they should be collected (i.e., 8 to 10 feet bgs).

3 Archive samples will be collected and held at the laboratory for potential future analysis of TPH or PCBs, pending the results of initial sampling.

4 Proposed soil boring OA11-DP28 is a contingency boring and will only be advanced if sufficient time allows.

Abbreviations:

bgs Below ground surface

PCB Polychlorinated biphenyl

TPH Total petroleum hydrocarbons

Additional Characterization
for OA-11 Interim Measure—Addendum

Figures



Legend

Total PCB Concentration in Soil in mg/kg

- Detected Concentration ≤ 1.0 mg/kg
- Detected Concentration between 1.0 and 10.0 mg/kg
- Detected Concentration between 10.0 and 50.0 mg/kg
- Detected Concentration ≥ 50 mg/kg
- PCBs Analyzed for, but Not Detected

Only locations with samples collected in June 2016 are labeled.

Sample Interval Depth:

- 0–2 ft bgs
- 2–5 ft bgs
- 5–10 ft bgs
- 10–16 ft bgs

Proposed Excavation Depth in ft bgs:

- 4 ft
- 8 ft
- 12 ft
- 14 ft

Area of Discovery

Jorgensen Fall Outfall Site

2-66 Sheetpile (AMEC, April 2011)

Jorgensen Forge / Boeing Property Line

Proposed Soil Boring

Notes:

- Total PCBs data sourced from 2011 JFOS Investigation, existing Golder Boeing Plant 2 Database, and 2016 Additional Characterization for OA-11 Investigation.
- June 2016 data is preliminary. Final data will be presented in draft Interim Measure Work Plan.
- New proposed excavation limits shown are preliminary pending the results of additional sample collection and analysis.
- Hybrid orthoimagery provided by ESRI (2011) and David C. Smith and Associates, Inc. (July 2011)

Abbreviations:

- bgs = Below ground surface
- CL = Clay
- CMP = Corrugated metal pipe
- ft = Feet
- mg/kg = Milligrams per kilogram
- OA = Other Area
- PCB = Polychlorinated biphenyl
- RA = Remediation Area
- SCL = Seattle City Light

